

REMARKS

Claims 1-38 are pending in the application, of which Claims 1, 15, are independent claims. The Office Action has rejected claims under 35 U.S.C. §§ 112, 102, and 103. This amendment amends certain claims and adds new claims.

The Applicants also request that the Office correct the Attorney of Record and Correspondence Address for this application.

Correspondence Address

A Revocation of Power of Attorney with New Power of Attorney and Change of Correspondence Address was filed in this application on February 17, 2006 and has been placed in the application file wrapper, as indicated by PAIR. Also note that the Attorney's address has been changed in the USPTO records to:

20 Pickering Street
PO Box 920353
Needham, MA 02492

It is respectfully requested that the Office update the Correspondence Address for this application accordingly.

Rejections Under Section 112

Claims 11-12, 17-18, 29-30, and 36-37 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. It is believed that the Office intended to reject Claims 30 and 31 instead of Claims 29 and 30. In response, amendments are offered to clarify the claimed subject matter.

In particular, Claims 11, 17, 30, and 36 have been amended to recite an area ratio between the nozzle openings. The amended claims now more clearly recite the claimed subject matter.

Reconsideration of the rejections under Section 112 is respectfully requested.

Rejections Under Section 102

Claims 1-3 and 5-6 have been rejected under 35 U.S.C. § 102(b) as being deemed anticipated by U.S. Patent No. 6,427,967 to Evans. The Applicants respectfully disagree and traverse the rejections.

The Applicants disclose and claim a particular gas regulator, namely a conserving regulator for providing a medical gas, such as oxygen, to a patient. Because oxygen is only needed for inhalation and because gas regulators are generally coupled to a finite quantity of gas (e.g., a portable oxygen tank), a steady flow of gas would waste the limited supply by dispensing gas that is not inhaled and shorten the duration of the available supply. The Applicant's gas regulator conserves gas by dispensing a calculated quantity of gas in response to an inhalation. In particular, the Applicant's regulator rapidly responds to a patient inhalation by delivering oxygen at the beginning of the inhalation.

The rapid response is due, in part, to an electronically operated pilot valve assembly. The electronic components can detect an inhalation faster than a typical pneumatic assembly.

The rapid response is also due to the near-balanced diaphragm in the slave valve assembly. The force exerted by the filled timing gas chamber against the diaphragm is only slightly greater than the force exerted by the delivery gas on the opposite side of the diaphragm. As a result, only a slight pressure drop in the timing gas chamber is needed to release the diaphragm and open the slave valve for delivery of the gas.

Evans discusses diaphragm-controlled industrial valves for various types of pipelines. FIG. 1 of Evans illustrates a prior art industrial valve that includes a diaphragm valve controlled the flow of fluid from an inlet conduit to an outlet conduit. As shown in FIG. 1, some of the fluid from the inlet conduit is ported into an upper chamber. Fluid from that chamber flows into the outlet conduit under the control of a pilot valve. As long as the pilot valve is closed, pressure

in that upper chamber builds and tends to seal the diaphragm against its seat to close the mouth of the outlet conduit. When the pilot valve is opened, fluid from the upper chamber flows from the inlet conduit to the outlet conduit. In other figures, Evans discusses chambers that are not dependent on the inlet conduit and thus can use other fluids to control the valve.

Evans seems to discuss a valve that can be electronically opened and closed at arbitrary times. The valve can be opened or closed for any amount of time as determined by external inputs. There is no indication that the delivery of fluid is intended to conserve fluid. Furthermore, there is no apparent discussion with respect to FIG. 1 to suggest venting the delivered fluid to atmosphere from the chamber.

Moreover, Evans would seem to have no reason to conserve delivery because there is no indication that a continuous or constant flow of fluid would be wasteful. Indeed, once flow starts in Evans, it appears that flow continues until the fluid delivery through the pipeline is no longer needed. Such an industrial valve is unrelated to the valves described and claimed the Applicants.

With reference to the independent Claim 1, as now amended, Evans at least does not disclose or suggest “a gas regulator” coupled to both the slave valve assembly and the timing chamber. Furthermore, Evans does not disclose or suggest in FIG. 1 that the timing chamber has “an outlet to atmosphere” as recited in the claims. As such the claims are patentably distinguishable from Evans.

Each dependent claim incorporates the limitations of its base independent claims and adds additional limiting subject matter. As such, allowance of the dependent claims follow from allowance of the independent claims. Because independent Claim 1 is distinguishable over Evans, dependent Claims 2-3 and 5-6 are also distinguishable over Evans.

Reconsideration of the Rejections under Section 102 is respectfully requested.

Rejections Under Section 103

Claims 4 and 7-38 have been rejected under 35 U.S.C. § 103(a). Claims 4 and 23 stand rejected based on Evans in view of U.S. Patent No. 4,738,283 to Shirai et al.; Claims 7-13 stand rejected based on Evans in view of U.S. Patent No. 4,789,143 to Smith et al.; and Claims 20-22

and 24-25 stand rejected based on Evans alone. Evans is the primary reference relied upon for all rejections under Section 103.

As discussed above, Evans is unrelated to gas conserving devices and fails to teach or suggest a gas regulator or an outlet from the timing chamber to atmosphere.

Shirai is cited against dependent Claim 4 and 23 as discussing a piezoelectric device. Shirai discusses a gas flow controller for a gas combustion apparatus. It is noted that a gas combustion apparatus is not the specified environment for the Applicants' claimed conserver device.

Smith is cited against dependent Claims 7-13 as discussing a bias spring. Smith discusses an electronic motor mount. A control valve is used to control damping. Smith is also not related to the Applicants' claimed conserver device.

In addition, the Applicants traverse the Office's assertion that the sizes of the nozzle openings and other dimensional limitations are a mere design choice.

While the references may not be properly combinable, independent Claims 1, 15, 20, and 34 have been amended to recite "a gas regulator" and "an outlet to atmosphere" as claim limitations. As discussed above, at least those limitations distinguish the claims over Evans. Furthermore, neither Shirai nor Smith teach or suggest the new limitations.

Each dependent claim incorporates the limitations of its base independent claims and adds additional limiting subject matter. As such, allowance of the dependent claims follow from allowance of the independent claims. Because independent Claim 1, 15, 20, and 34 are distinguishable over Evans either alone or in combination with either Shirai or Smith, dependent Claims 4 and 7-14, 16-19, 21-33, and 35-38 are also distinguishable over the cited references.

Reconsideration of the Rejections under Section 103 is respectfully requested.

New Claims

New Claims 39-43 have been added to the application. No new matter is being added by way of these new claims.

Claims 39 and 40 are dependent claims, which are supported at least at page 7, lines 26-27, of the originally-filed application.

Claims 41 and 42 are independent claims drawn to a method of fabricating the device claimed in Claims 1 and 15.

Claim 43 is an independent claim drawn to another embodiment, which is supported at least at page 9, lines 15-18, of the originally-filed application.

Acceptance and allowance of the newly added claims is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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